

## REMARKS

### I. Disposition of Claims

Claims 1-12 have been canceled and 18-19 added. Additionally, Claims 13 and 15 have been amended. As a result, Claims 13-19 are currently pending. Support for the amendedments and new claims can be found throughout the specification, for example, in the original claims and on page 21, third full paragraph. No new matter has been added.

### II Claim Objections

Claims 5, 7 and 15 were rejected for being of improper dependent form. As claims 5 and 7 have been canceled, the rejection of Claims 5 and 7 is moot. Claim 15 has been amended to contain structural limitations not present in the previous claim, and therefore the claim is in proper dependent form.

### III Double Patenting

The Examiner has indicated that in the event of the allowance of the pending Claims, Claims 8 and 11 will be rejected under 37 CFR 1.75 as being substantial duplicates of other Claims. As these Claims have been canceled, the rejection is moot.

### IV Novelty and Non-Obviousness

The Examiner has rejected Claims 1, 2, and 5-17 under 35 USC 102(b) as being anticipated by "Official Notice of commercially available materials comprising collagen, keratin, or silk". The Examiner further rejected Claim 1, 2, and 5-17 under 35 USC 102(b) as being anticipated by Pauly et al. (US 2003/0091518-A1). The Examiner has further rejected Claims 1 and 5-17 under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Urita (JP 10-338615-A). The Examiner has rejected Claims 1, 2, and 5-17 under 35 USC 102 (b) as anticipated by, or in the alternative, under 35 USC 103(a) as obvious over Natsume et al. (JP 01-280465-A), Erwin (US 4946450), Sano (US 5718954-A), Sakaki (US 5587411-A), and Sato (US 4638024), individually.

In order to anticipate a claim, a reference must teach every element of the claim.

### The Pending Claims

The pending claims relate to a method for preventing or reducing the adverse effects of radiation of at least one member selected from the group consisting of X-rays, gamma rays, and electron beams on a subject that has been determined to be exposed to such radiation by using collagens, keratins, and/or silk fibroins.

#### Patentability of the pending claims

Pauly et al. (US2003/0091518; hereafter “D1”) discloses cosmetics and/or pharmaceutical preparations comprising a *Brassicaceae* extract together with UV/IR-light protection agents. Example 11 (Table 7). etc., of D1 disclose formulae of cosmetics comprising keratins and/or collagen. However, D1 does not specifically disclose collagens, keratins, and silk fibroins act as protection agents against X-rays, gamma rays, and electron beams.

Urita et al. (JP10-338615; hereafter “D2”) merely discloses that natural silk fibroins can absorb infrared rays, and that protection from harmful sunrays is possible by using cosmetics containing natural silk fibroins. D2 nowhere suggests that natural silk fibroins have protective effects against x-rays, gamma rays, and electron beams.

Natsume et al. (JP01-280465; hereafter “D3”) merely discloses that collagens can be formed into a film. D3 nowhere teaches or suggests that collagens have protective effects against X-rays, gamma rays, and electron beams.

Erwin (US4946450; hereafter “D4”) discloses that collagens can be used as an eye shield. D4 nowhere suggests that collagens can act as protection agent against X—rays, gamma rays, and electron beams.

Sano et al. (U55713954 hereafter D5’) discloses that materials containing fine particles of natural organic material, and that such fine particles can provide the materials with humidity absorption/releasing properties, humidity permeability, compressibility. etc. However, D5 merely discloses silk powder and others as examples of fine particles of natural organic materials. D5 nowhere suggests protection effects against X-rays, gamma rays, and electron beams.

Sakaki et al. (1355587411; hereafter D6) merely discloses a composition comprising keratins or other proteins as a rubber composition having enough strength for practical use and is harmless to human beings. D6 nowhere teaches or suggests that keratins have protection effects against X-rays, gamma rays, and electron beams.

Sato et al. (US4638024; D7) merely discloses a composition containing protein such as glue (keratins is a main constituent of protein-based glue) as a polymer composition for use in microcapsule, photosensitive material, etc. D7 is silent about protection effects against X-rays, gamma rays, and electron beams.

By the “Official Notice of commercially available materials comprising collagen, keratin or silk” the Examiner does not provide evidence that it was known to those of skill in the art that these materials had protection effects against X-rays, gamma rays, and electron beams.

As described above, D1 to D7, and the Official Notice, nowhere teach or suggest that collagens, keratins, and silk fibroins have protective effects against x-rays, gamma rays, electron beams. Therefore, nothing in these references would suggest the recited step of determining that a subject will be exposed to X-rays, gamma rays, or electron beams. Accordingly, it is not obvious to one of ordinary skill in the art to first determine whether a subject will be exposed to the recited forms of radiation and then based on that determination, blocking or reducing the adverse effects of the radiation by using collagens, keratins, and/or silk fibroins. Accordingly, claims 13 to 19 are neither anticipated by or rendered obvious over D1 to D7 and the official notice.


### CONCLUSION

In view of the above, it is submitted that the claims are in condition for allowance. Reconsideration and withdrawal of all outstanding rejections are respectfully requested. Allowance of the claims at an early date is solicited. If any points remain that can be resolved by telephone, the Examiner is invited to contact the undersigned at the below-given telephone number.

Respectfully submitted,

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